THURSDAY, OCTOBER 19, 1876

MAUDSLEY'S "PHYSIOLOGY OF MIND"

The Physiology of Mind. Being the First Part of a Third Edition, Revised, Enlarged, and in great part Re-written, of "The Physiology and Pathology of Mind." By Henry Maudsley, M.D. (London: Macmillan and Co., 1876.)

MAN very long ago, probably about the time he became man, reflected that he felt and thought; since then no one has ever had the least doubt, as to whether a given object of thought was a fact of mind or of body; and every attempt to resolve the one into the other has been but the vain enterprise of a misguided intelligence. The physical and mental stand over against each other—the fundamental duality of being which no effort of thought has been able to transcend. How, after reflecting that they felt, our far-off ancestors came to refer their feelings and reflections to a soul or spiritual entity, which they supposed to inhabit and animate the body, to cause and direct its movements, can never be more than a subject of speculation. But that such was the universal belief of mankind, that such is still the creed of all save a few, and that all language has been evolved under this conception, scarcely requires to be stated. For ages the curious speculated around the fascinating mystery of the union of soul and body—and yet the mystery remained. A slow change of view, however, was taking place. From the belief that the life and movement, the health and disease of the body, were in some way directly dependent on a conscious, thinking soul, we have passed gradually, very gradually, to the view held by that body of thinkers who claim to be the scientific psychologists of the present day, which is, that mind, feeling, and thought, in a word, consciousness, is dependent on bodily organisation. Dr. Maudsley presents the volume before us as a treatise or "disquisition, by the light of existing knowledge, concerning the nervous structures and functions which are the probable physical foundations, or the objective aspects of, those natural phenomena which appear in consciousness as feelings and thoughts, and are known only in that way."

Ten years ago, when Dr. Maudsley published the first edition of his work, "The Physiology and Pathology of Mind," of which the volume before us is the first part much enlarged, there was a need, which no longer exists, for iterating and reiterating the evidence of the invariable and uniform connection of mental phenomena with nervous organisation. This useful work Dr. Maudsley did well, and as he himself says, "with all the vehemence of youthful enthusiasm." The dependence of consciousness on nervous organisation may be claimed as fairly established, and the great question that now presses on the attention of the scientific psychologist is, What mode of connection can we figure to ourselves as the relation subsisting between consciousness and the material organism? We are among those who maintain that to this problem no acceptable solution has yet been proposed. Dr. Maudsley thinks otherwise, and much of the present volume is taken up with attempts to unveil this deepest of nature's mysteries. We have come to believe, taking it as established, that for a given fact of nervous action the corresponding fact of consciousness will ever be the same. The question now is, in what relation does this fact of consciousness stand to the constantly related, but totally unlike, phenomena which we describe as nervous action? The phenomena, it is answered, are not so totally unlike. "Above all things it is now necessary," says Dr. Maudsley, "that the absolute and unholy barrier set up between psychical and physical nature be broken down, and that a just conception (of mind) be formed, founded on a faithful recognition of all those phenomena of nature which lead, by imperceptible gradations, up to this its highest evolution." (We continue the quotation simply as illustrating Dr. Maudsley's style, which we venture to think is still at times rather above the sober unimpassioned language of science.) "Happily, the beneficial change is being gradually effected, and ignorant prejudice or offended self-love in vain opposes a progress in knowledge which reflects the course of progress in nature; the stars in their courses fight for such truth, and its angry adversary might as well hope to blow out with his pernicious breath the all-inspiring light of the sun as to extinguish its ever-waxing splendour." Well, the unholy barrier between psychical and physical nature has to be broken down, and to this end we are called on to form a conception of mind which will enable us to conceive it as a product of physical evolution. Complete failure has, we think, been the reward of every one who has ventured on this most hopeless undertaking (see our article "Cosmic Philosophy," NATURE, August 5, 1875). Let us see, however, how Dr. Maudsley would have us proceed. In the first place, we are invited to perceive distinctly "that consciousness is not co-extensive with mind, that it is not mind but an incidental accompaniment of mind." This is certainly a large demand to begin with, and we would rather be with those who would maintain "that it is improper and indeed absurd to speak of mind except when speaking of states of consciousness." The word "mind" has been used by all mankind to denote states of consciousness, and not a material organism, nor the changes in an organism. The philosophers also are against Dr. Maudsley, but of these he makes little account. We may notice in passing, however, that, in preparing for criticism Prof. Bain's statement that mind is "the sum total of subject experiences, that which has not extension," he finds it convenient to "alter the wording of it" so as to make it "run thus—mind is the sum total of the experiences of that which has not extension, *that which has not extension being a subject!*" We can only suppose that Dr. Maudsley has wholly misunderstood Prof. Bain's words. Prof. Bain, as we understand him, means to give a double description of mind—it is the sum total of subject experiences, or again, it *is* that which has not extension. The difference between this and the statement—mind is the sum total of the experiences of that which has not extension—is obvious.

But to proceed. By insisting that "emotions good or bad are physical phenomena," "that ideas are insensible motions of nerve-molecules, of the nature of vibrations," Dr. Maudsley can without much further violence to language bring the relation of mind to the physical organism under the familiar conception of organ and function.

Cabanis spoke of the brain secreting thought as the liver secretes bile. Dr. Maudsley recognises, however, that this is a "fallacious comparison." "Here," he says, "as elsewhere, confusion is bred by the common use of the word secretion to express, not only the functional process but the secreted product, both the insensible vital changes and the tangible results of them." It seems, then, that by the word "mind" Dr. Maudsley really means to denote certain vital changes of the brain and nerves; when he speaks of an emotion or an idea, he means to refer to certain peculiar agitations of the white and gray matter of the nervous system. There is no difficulty now in seizing Dr. Maudsley's meaning when he speaks of "the performance of an idea," nor in conceiving "mind," that is, the nervous operations, as the functions of the nervous system. And we have no other criticism to make than is implied in the remark that Dr. Maudsley by using language in this way would not, we fear, commend himself to the old woman who was all her life so thankful that Adam had had the good sense to call all the animals by their right names.

Accepting Dr. Maudsley's nomenclature we have not the slightest difficulty in conceiving "that all the operations which are considered mental and to belong to psychology, may be performed as pure functions of the nervous system, without consciousness giving evidence of them, or having any part in them;" on the contrary we are, as will presently appear, disposed to be more thorough than Dr. Maudsley himself in regarding the physical machine as sufficient for all its own operations. But before proceeding to this the second branch of our criticism, let us recall the original, in fact, the only difficulty. Are we, now that we can talk of the "physiological mechanism" working out the "cognition of a logical necessity without the aid of consciousness"—are we in a better position to figure to ourselves the mode of connection between consciousness, this mere "satellite of mind," and those physiological operations? The darkness remains thick and impenetrable as ever. Here are some of the empty, worse than empty, phrases, with which Dr. Maudsley would have us conceal the limits of our intelligence, and our blank ignorance of what lies beyond these limits. "Consciousness," he says, "is a quality or attribute of the concrete mental act." It is, however, we may be permitted to think, a most singular quality of physiological operations—we must not forget that these are our mental facts—for it has, like Lucifer of old, rebelled against the supreme power, having, as Dr. Maudsley complains, "miraculously got rid of its substance, and then with a wonderful assurance assumed the office of commenting and passing judgment from a higher region of being, upon the nature of that whereof it is actually a function." Consciousness, then, is a function, an attribute, a satellite, a quality, the usual but "not the indispensable accompaniment of mental function." To ask *why* "cerebral organisation functions as conscious energy?," is, says Dr. Maudsley, "an unwarrantable demand." It would probably be so; what is asked of men of science is not *why?* but *how?* How are we to manipulate our conceptions of matter and motion, so as to get out of them our conception of consciousness? The thing is not to be done.

We come now to the second branch of our criticism. Strange to say, after preaching the gospel of Matter and "the wonderful works which it is continually doing before our eyes," Dr. Maudsley finds himself as helpless as the most bewildered of the metaphysicians, whom he holds in such supreme contempt, to work the animal machine without the assistance of something that is not physical. In arguing against the presence of consciousness in the performances of the decapitated frog, Dr. Maudsley contends that consciousness is not required for the performance of these movements, that they "may be explained satisfactorily without the assumption that its spinal chord possesses feeling and will," "that the frog acts necessarily and blindly." In thus contending for the "mechanical," "the entirely physical nature of the movements," Dr. Maudsley would distinguish them from another class of actions which he recognises as not entirely physical in their nature, as somehow "dependent on consciousness," not blind and necessary, but "instigated by will and guided by intelligence." Surely it is to little purpose that Dr. Maudsley has made thought and emotion physical phenomena, if he must after all call in the aid of consciousness of something not physical, to work the mechanism of a frog. This is not, as might be supposed, a mere slip in a subordinate argument. The thraldom of spiritualism, from which Dr. Maudsley has not escaped, betrays itself in all parts of his book, even when he is deliberately straining after his favourite conception of a thinking machine. "It may seem," he says, "an extravagant thing to say, but to me it seems conceivable that a man might be as good a reasoning machine without as he is with consciousness, if we assumed his nervous system to be equally susceptible to the influences which now affect him consciously, and if we had the means, by microscope or galvanoscope or some other more delicate instrument hereafter to be invented, of reading off the results of his cerebral operations from without." Why does Dr. Maudsley need to call in the aid of microscope, or galvanoscope, or some other more delicate instrument? Why should his unconscious man, equally susceptible to the influences which now affect him consciously, not be able when asked to tell us the results of his deliberations, or to write them down for us? Is it that after the sound waves of our question have agitated the tympanum and set the appropriate nervous mechanism in motion, these physical phenomena have to be translated into, or taken note of, by consciousness—by something that is not mechanism, or that is at least *more* than the working of mechanism—in order that this nervous stimulation from without should give rise to the movements implied in speaking or writing? Dr. Maudsley's unconscious reasoner who cannot tell us the results of his reasoning is a defective construction. In spite of himself Dr. Maudsley gives to consciousness, to "the witness," "the sense by which the (reasoning) operations are observed within," exactly the mysterious place and inconceivable functions which less advanced people attribute to the thinking soul, which they believe to inhabit the body to cause and direct its movements.

Our space requires that we should bring our criticism to an end; nor is there much occasion to carry it further.

We shall therefore conclude with a remark on Dr. Maudsley's attempt to make something of the will—that apparent point of contact of the physical and the mental, which has been the veritable will-o'-the-wisp of our psychologists. Towards the end of his book (p. 442) Dr. Maudsley, in examining a "simplest case of volition," tells us that it "sprang from that fundamental property of organic element by which what is agreeable is sought, what is painful is shunned." This is not advancing knowledge, but rather the reverse. How can any substance, whether we call it organic element or by any other name, seek the agreeable and shun the painful? By movements; we know of no other way of seeking and shunning. But how are these mental things, pain and pleasure, related to movements of any kind? Here we find ourselves, after much laborious groping, face to face with the very problem we set out to solve. Truly what we have to learn in psychology, before and above all things, is our ignorance.

DOUGLAS A. SPALDING

OUR BOOK SHELF

Annual Record of Science and Industry for 1875. Edited by Spencer F. Baird, with the assistance of eminent men of science. (London: Trübner and Co., 1876.)

FOR this admirable record we have again to thank our American friends. The volume now extends to some 900 pages, and each year brings improvement as well as enlargement of its contents. Unfortunately so many subjects are now embraced within the scope of this annual record, that the space devoted to each subject is necessarily curtailed. This, we think, is a misfortune. If feasible, we would venture to suggest a division of the record into two parts, inasmuch as pure, applied and very homely science are here in close and curious juxtaposition. Thus we find "tables of elliptic integrals," the "computation of the areas of irregular figures," or the "dissipation of energy," followed by "beautiful ornament for rooms," "renewing wrinkled silk," and "improved modes of closing barrel hoops." It is true the editor has most carefully and laboriously classified the whole, so that we are gradually let down from elliptic integrals at the beginning to barrel hoops at the end. Doubtless the editor considered that by these things men would learn "beer and skittles" was an integral part of the scientific as well as the popular need. The first half of the work, which gives a general summary of scientific and industrial progress for the past year, is more carefully edited than the brief notices of papers which form the second half. For example, turning to general physics, we find paragraphs on Mr. Crookes' experiments scattered about in several places; the same is true of Dr. Guthrie's researches on cryohydrates and of several others we might name. Again, in the index, which is extremely minute, the same name is put under different headings; thus, Mr., Mr. Frederick, and Prof. Guthrie are the same person, though separately referred to. But in spite of these criticisms, the book is a useful one and contains a vast mass of information. Sketchy as it is, nevertheless it is undoubtedly the best annual record of science—in fact the only one in the English language; and hence we are glad to observe that a suggestion we made in noticing the preceding volume, namely, having a London as well as a New York publisher, has now been carried out. The scientific bibliography of the year and the references to periodicals, giving the fullest reviews of the books themselves, is an excellent and valuable feature of this Record.

Causeries Scientifiques. J. Rothschild, Editeur. (Paris.)

THIS little book gives a brief and popular account of some of the principal discoveries and inventions of the past year. It is written in a lively, simple style, and doubtless has done something in France to extend an interest in science and to spread a knowledge, though but a superficial one, of the more striking results of experimental research. The absence of technical terms brings the volume before us within the comprehension of those who have had no scientific education. How is it we are so behind our neighbours in books of this kind? It would, however, have been well if the editor of this volume had paid a little more attention to the spelling of English names, and exercised closer supervision throughout, as we notice several misprints in its pages.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*]

The Self-fertilisation of Plants

SOME years ago my suspicions were strongly aroused by certain observations, against the importance of intercrossing; and since then other conclusions, such as the following, have been steadily forcing themselves upon me, and which will probably agree with Mr. T. Meehan's: (1) that self-fertilisation was the primordial condition of plants; (2) that conspicuous flowers of all kinds are a secondary result, due to insect agency, by increasing the size &c., of the perianth; (3) that this has, in its turn, caused a correlative disturbance in the sexual arrangements, viz., that it has caused to be sacrificed the (originally) normal state of self-fertilisation, and has set up cross-fertilisation instead; (4) that this latter being relatively less certain of being effected, is *compensated* for by a superabundance of pollen, alteration in its form and influence, dimorphism, the separation of sexes, and perhaps other details of sexual differentiation; (5) that the existing self-fertilising flowers are in no case primordial but degraded forms; (6) that in consequence of such degradation, of the perianth especially, the sexual organs have recovered their original energies, and so resume their long lost self-fertilising powers.

The *rationale* of the whole process I take to be "compensation." In the first instance, the enlargement of the corolla is accompanied either by a more or less degree of destruction of one or both of the sexual organs; as in the ray-florets of *Centaurea*, which are neuter; in "double" flowered compositæ, where the new "ligulate" ones pass from the usually hermaphrodite condition of the tubular disk florets, or male, as in *Calendula*, to female only, or even to the neuter state, as in Dahlia; or else by the above-mentioned differentiations of the sexual organs in their forms and functions. The primary cause of such increase in the perianth may, perhaps, be due to the mere mechanical influence of the insects themselves, which by constantly renewed pressure, may determine a flow of nutriment to those parts; this—which I only assume as probable—diverts it temporarily from one or both whorls of essential organs. The result is protandry or protogyny, &c. To compensate again for the loss of self-fertilisation, there come into play, as stated above, all the adaptations to *secure* inter-crossing. Hence the idea of plants abhorring inter-breeding appears to have arisen from observing conspicuous flowers only, and as these are in the majority nowadays, it was a reasonable conclusion: but the self-fertilising ones are extremely numerous altogether; and it is this small but highly significant minority, not to add the special contrivances which occur in order to secure self-fertilisation, which leads one to the opposite conclusion.

Self-fertilisation I believe not to be always an absolute but a purely relative condition; that although many species are now altogether self-fertilising, yet whenever conspicuous flowers become dwarfed, I suspect there is a tendency to their becoming self-fertilising. I have found it to be so in some cases, and should feel extremely glad if any readers of NATURE would kindly observe, at this season of the year especially, whether any dwarfed wild or other flowers they can find are self-fertilising or not, or else be good enough to forward the same to me. For example, I have, this September, found dwarfed blossoms of *Linaria vulgaris* often spurless and without honey, having the stigma situated between the two pairs of anthers, and the pollen-tubes pouring into it both from above and below. Similarly in small flowered